

Applicants : Allan Green et al.
Serial No. : 09/981,124
Filed : October 17, 2001
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In the Claims

Please amend the claims by replacing all prior listings of claims with the listing of claims below pursuant to 37 C.F.R. §1.121:

1-40. (Canceled).

41. (Currently Amended) A process for producing a transgenic plant comprising

a) transforming a cell or tissue of a plant with a nucleic acid encoding a polypeptide having the following three histidine-rich regions (i), (ii) and (iii):

(i) His-(Xaa)₃-His (SEQ ID NO: 21) or

His-(Xaa)₄-His (SEQ ID NO: 22);

(ii) His-(Xaa)₂-His-His (SEQ ID NO: 23) or

His-(Xaa)₃-His-His (SEQ ID NO: 24); and

(iii) His-(Xaa)₂-His-His (SEQ ID NO: 23) or

His-(Xaa)₃-His-His (SEQ ID NO: 24),

wherein His designates histidine, Xaa designates any naturally-occurring amino acid, (Xaa)₃ refers to a sequence of three amino acids, (Xaa)₄ refers to a sequence of four amino acids, and (Xaa)₂ refers to a sequence of two amino acids,

wherein the polypeptide comprises a sequence of amino acids at least 65% identical to the sequence of amino acids set forth in SEQ ID NO: 2, and

wherein the nucleic acid encodes an epoxxygenase, and

wherein the nucleic acid is under the control of a promoter conferring transcription of the nucleic acid in the plant;

b) regenerating the transformed cell or tissue to produce the transgenic plant; and

c) examining the transgenic plant or part thereof for the presence of epoxy fatty acids to determine whether the

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transgenic plant has epoxy fatty acids.

42. (Previously Presented) The process of claim 41, wherein the plant is *Arabidopsis thaliana*, flax, oilseed rape, sunflower, safflower, soybean, sesame, cottonseed, peanut, olive or oil palm.

43. (Previously Presented) The process of claim 41, wherein the plant is flax, sunflower, corn, or safflower.

44-49. (Cancelled)

50. (Previously Presented) The process of claim 41, further comprising a step of selecting a transgenic plant expressing an epoxxygenase.

51. (Previously Presented) The process of claim 50, wherein the plant is *Arabidopsis thaliana*, flax, oilseed rape, sunflower, safflower, soybean, sesame, cottonseed, peanut, olive or oil palm.

52. (Previously Presented) The process of claim 50, wherein the promoter is a seed-specific promoter.

53. (Previously Presented) The process of claim 50, further comprising producing seed of the plant.

54. (Previously Presented) The process of claim 53, further comprising selecting seed having 12,13-epoxy-9-octadecenoic acid at a level of greater than 0.7% (w/w) of the total seed fatty acid content.

55. (Previously Presented) The process of claim 50, wherein the

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nucleic acid is from a plant that synthesizes epoxy fatty acids.

56. (Previously Presented) The process of claim 55, wherein the plant is of *Chrysanthemum* spp., *Crepis* spp., *Euphorbia* spp., or *Vernonia* spp.

57. (Currently Amended) A process for producing a transformed plant cell comprising introducing into the plant cell a nucleic acid encoding a polypeptide having the following three histidine-rich regions (i), (ii) and (iii):

(i) His-(Xaa)₃-His (SEQ ID NO: 21) or

His-(Xaa)₄-His (SEQ ID NO: 22);

(ii) His-(Xaa)₂-His-His (SEQ ID NO: 23) or

His-(Xaa)₃-His-His (SEQ ID NO: 24); and

(iii) His-(Xaa)₂-His-His (SEQ ID NO: 23) or

His-(Xaa)₃-His-His (SEQ ID NO: 24),

wherein His designates histidine, Xaa designates any naturally-occurring amino acid, (Xaa)₃ refers to a sequence of three amino acids, (Xaa)₄ refers to a sequence of four amino acids, and (Xaa)₂ refers to a sequence of two amino acids,

wherein the polypeptide comprises a sequence of amino acids at least 65% identical to the amino acid sequence set forth in SEQ ID NO: 2, and

wherein the nucleic acid encodes an epoxxygenase, and

wherein the nucleic acid is under the control of a promoter conferring transcription of the nucleic acid in a plant cell and is stably integrated into the genome of the cell, and determining whether the transformed plant or part thereof has epoxy fatty acids, thereby producing the transformed plant cell.

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58. (Previously Presented) The process of claim 57, wherein the plant is *Arabidopsis thaliana*, flax, oilseed rape, sunflower, safflower, soybean, sesame, cottonseed, peanut, olive or oil palm.
59. (Previously Presented) The process of claim 57, wherein the nucleic acid is from a plant that synthesizes epoxy fatty acids.
60. (Previously Presented) The process of claim 59, wherein the plant is of *Chrysanthemum* spp., *Crepis* spp., *Euphorbia* spp., or *Vernonia* spp.
61. (Previously Presented) The process of claim 57, wherein the promoter is a seed-specific promoter.
62. (Previously Presented) The process of claim 41, wherein the promoter is a seed-specific promoter.
63. (Previously Presented) The process of claim 62, further comprising producing seed of the transgenic plant.
- 64-67. (Canceled)